Highlights

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PENTAGON RESEARCH MANAGEMENT

Department of Defense has spelled out in detail the role of Dr. Herbert York, newly appointed Director of Defense Research and Engineering. The lengthy charter for his office apparently gives him veto power over his former chief, Roy Johnson, Director of the Advanced Research Projects Agency. However, those familiar with Pentagon directives know that actions over a period of time speak louder than official words.

Charter of the new office spells out its authorities, responsibilities, functions and relationships with the military departments and other Department of Defense Agencies. It provides that Dr. York will be the principal advisor and staff assistant to the Secretary of Defense in these "functional" fields:

* Scientific and technical matters.
* Basic and applied research.
* Research, development, test and evaluation of weapons, weapons systems, and defense materiel.
* Design and engineering for suitability, producibility, reliability, maintainability and materials conservation.

Under the new charter, Dr. York will also have administrative direction of the Weapons System Evaluation Group.

Here is how the Pentagon sums up his overall task: "Under the direction, authority and control of the Secretary of Defense, the Director of Defense Research and Engineering shall supervise all research and engineering activities in the Department of Defense and shall perform specified functions in his assigned field of responsibility."

VETO POWER: The language that could make Dr. York the Pentagon's research czar is worth noticing. He is given the power to "approve, modify or disapprove programs and projects of the military departments and other Department of Defense agencies in his assigned fields to eliminate unpromising or unnecessarily duplicative programs, and initiate or support promising ones for research and development..."

(A limited number of copies of the complete directive are available without charge. Write Defense Branch News Desk, 2E761, The Pentagon, Washington, 25, D.C. for Directive 5129.1.)

TECHNICAL INFORMATION PROBE

Senate investigators have revealed that the Armed Services Technical Information Agency (ASTIA) is hastily revamping its security system following the disclosure that an employee removed a total of 548 classified documents from its vast files of military research and development reports. The employee, subsequently discharged, told investigators that he was prompted by a desire to expose weaknesses in the system.

The security system, as outlined in a Senate report, contrasts sharply with the elaborate measures for the protection of classified information required by the military for contractors and research organizations.

According to the report:

--The employee was not authorized to receive classified information in any form, yet had access to the ASTIA restricted area of the Library of Congress.

--After ASTIA moved to its own quarters at Arlington Hall, Va. last year the employee found 136 negatives marked "secret" left behind.

--The ASTIA guard system was "totally inadequate" and as a practical matter no guards were on duty from midnight on, or during weekends. ASTIA had no alarm system, although there was a barbed wire fence with perimeter guards protecting the building outside.

--The Commander of ASTIA estimated that there were millions of documents on file but that his estimate might be off by two or three hundred thousand. He also said there was no system of intraaccountability of documents and no way of knowing which documents were actually in the agency at a given time.

Commenting on the testimony, given at closed-door hearings, the Senate group declares:

"On the basis of the information developed, any document in ASTIA could be compromised by an individual without it ever being known. Thus, if an individual would steal documents and destroy them, and subsequently admit his wrongdoing, ASTIA would be unable to advise what documents had been taken."

ASTIA has now increased its guard force from 3 to 21 and is working on plans for an introaccountability system of all classified material.

SPACE RESEARCH PLANS:

* Project Saturn -- Pentagon has designated its program to develop a 1,500,000 pound thrust booster for heavy space payloads as "Project Saturn" and expects to have a vehicle ready for test flight next year. The cluster of liquid rocket engines is under development at the Army Ballistic Missile Agency, Huntsville, Ala.

* Project Vanguard -- The National Aeronautics and Space Administration will soon attempt to launch a "weather eye" satellite in the Vanguard series. Three Vanguard vehicles are available for satellite attempts. Advanced Research Projects Agency is reported well along in plans to attempt a more sophisticated weather reporting system using miniature vidicon television cameras developed by RCA.

AIR FORCE RESEARCH: New Regional Offices are being established by the Air Research and Development Command (ARDC) at Boston, Washington, Denver and Dallas to supplement existing offices in New York, Chicago and Los Angeles. Offices will administer contracts, locate new contractors, and aid small business.

> ARDC says the new set-up is planned to speed the processing and evaluation of research and development ideas. Quicker service is forecast for contractors submitting unsolicited proposals and scientific materials with possible Air Force applications. Each office will also have a full-time small business executive.
>
> Headquarters, ARDC, Andrews Air Force Base, has also set up new offices to monitor all ARDC contractor relations activities. A new post, Assistant Deputy Commander for Technical and Contractor Services, is established under Col. Richard E. Sims. His office will be joined by a new Directorate of Technical Services, headed by Col. Frank M. Fazio, and the Directorate of Procurement under Col. John Prodgers.

(Details from Office of Information Services, HQ, ARDC, Andrews Air Force Base, Washington 25, D.C.)

NAVY RESEARCH: Resignation of Garrison Norton, Assistant Secretary of the Navy for Air, puts into effect previously authorized change in Naval Research management. New post, unfilled at deadline, will be Assistant Secretary, Research and Development. The new official will be responsible for R&D, atomic energy and aviation matters.

NEW RADIOISOTOPE REGULATIONS: Atomic Energy Commission has simplified its licensing procedures for radioisotopes contained in sealed devices such as those used by industry in research, quality control and preparation or packaging. New regulations place a number of gauging and measuring devices and devices for producing light and ionizing air under a "general license." This means that users won't have to have specific licenses for each authorized device.

(Details available from AEC, Office of Industrial Information, Washington, 25, D.C.)

NIKE-ZEUS PROGRESS: Army is now fabricating several test models of its anti-ICBM Nike-Zeus system for demonstration flights against various types of targets, including actual ballistic missiles.

Maj. Gen. William W. Dick, Jr., Director of Special Weapons, says "development progress to date has been most encouraging and the program is on schedule." He adds that there is enough money in the new budget to continue a "high urgency and test program."

Major Technical breakthrough claimed for the project:

* New Radar technique permitting very large volume coverages on large numbers of very small targets at very high data rates. The system is said to use available components while permitting the substitution of higher performance components at a later date without major redesign or modification.

ENGINEERING AND OCEANOGRAPHY

Industry and the engineering profession will play a major role in a greatly expanded program of oceanographic research proposed by a special committee of the National Academy of Sciences. Because these recommendations should provide clues to long-term trends of interest to those not now connected with the marine sciences they are cited here for reference purposes:

(1) A vigorous program should be conducted for the development of manned submersibles that can operate down to and on the bottom of most of the ocean.

* An improved bathyscaph using the best materials available should be designed and built immediately.
* Funds should be provided for a mother ship and auxiliary equipment for the bathyscaph Trieste, now in use on the West Coast.
* A continuous design and development program should be initiated aimed at building deep and mid-depth manned vehicles.

(2) The need for open-ocean manned research platforms which are stable and which can remain in place so that time studies can be made, seems essential and the design for such a buoy should be started.

(3) A major program should be supported aimed at developing and using anchored and drifting buoys for obtaining space and time coverage of ocean characteristics.

(4) It seems likely that aircraft can be used effectively for some research and surveys on the open ocean, particularly for studies involving the joint problems of oceanography and meteorology. Nearly all laboratories will need single engine planes; several will need twin engine amphibious planes; some will need four engined commercial-type aircraft.

(5) Surface icebreakers are of limited value to Arctic oceanographic research compared to properly equipped submarines. Efforts should be made to develop a submarine capable of breaking into and out of the ice.

(6) Instruments should be developed for survey purposes which are more accurate, effective and trouble-free. Specialized devices such as Loran, inertial navigation equipment, gravity meters and stable platforms should be made available.

(7) A major program aimed at developing new high-sea engineering techniques should be started. Our abilities to handle heavy equipment and to conduct such operations as drilling and bottom sampling limit our operations.

(8) Machine aids to computation and data storage have much to offer and should be budgeted.

(9) High pressure facilities to permit controlled physical and biological experiments in the laboratory are needed.

Committee recommended active industry participation in development and manufacture of new devices and instruments. About $10 million annually is proposed for this phase of the program.

(Condensed version of the report available free. See Publication Checklist.)

RESEARCH CHECKLIST

( ) COMPUTER NETWORK: Organization of a network of several high-speed electronic computers to perform a common large-scale task has been investigated by the National Bureau of Standards. Researchers found that an increase in the speed of a solution can be achieved by dividing up the total task into different pieces, and by having all the different computers in the system work on different pieces of the task simultaneously. The investigations also included the problem of designing an instruction system for carrying on such collaborative operations effectively.

(Details available free. Write National Bureau of Standards, Office of Technical Information, Washington 25, D.C. for Summary Technical Report No. 2302.)

( ) RUSSIAN COMPUTER: The Central Intelligence Agency has made available translated information on a computer which the Russians call "the most powerful in the world." The device, in use at Kiev University, is described by a Soviet writer as "incorporating 24 integrators and characterized by a high degree of automation. Another computer is said to be in use to solve problems of efficient oil-field exploitation. This device is said to illustrate alleged Soviet mastery in series production of "specialized analog computers capable of investigating dynamic systems and other processes described by differential equations of the order 6 to 32."

(Details available. Write OTS, U.S. Department of Commerce, Washington 25, D.C. for PB 131 891T. $2.75.)

( ) METAL COATING RESEARCH: Studies by the Army Ordnance Corps indicate that no commercial coatings tested provide required protection for steel in the presence of gasoline and moisture. Investigators found that sufficient protection could be afforded by a new baked-on paint system and five air-dry coating systems. The satisfactory coatings all contained butadiene-acrylonitrile copolymer and phenolic resin.

(Report available. Write OTS, U.S. Department of Commerce, Washington, 25, D.C. for PB 131 738. 35 pages. $1.)

( ) SULFUR RESEARCH: Researchers at the National Bureau of Standards have devised a new method of purifying sulfur to better understand and predict chemical behavior. With the aid of a newly designed adiabatic calorimeter for measuring heat quantities at high temperatures the Bureau has accurately measured thermodynamic properties.

(Details available free. Write National Bureau of Standards, Office of Technical Information, Washington 25, D.C. for Summary Technical Report No. 2317.)

( ) COMBUSTION RESEARCH: A new photographic technique for the study of fuel sprays will be used in investigations at the University of Wisconsin financed by the National Science Foundation. The researchers hope to learn more about the process by which liquid fuel mixes with air and becomes combustible. The photographic technique, developed under a previous grant, mixes fluorescent dyes with fuel droplets. This is said to make primary light sources under high intensity light. The studies are expected to have application in the design of combustion chambers for liquid fuel ramjet and reciprocating engines.

( ) RESEARCH TEAMWORK: National Institutes of Health has found that research grant applications from teams of two or more investigators has almost doubled in the past three years. Formerly, about 16 percent of requests received for research support involved two or more co-investigators. Last year the comparable figure was 29 percent.

( ) CLIMATE RESEARCH: Information obtained in Antarctica during the International Geophysical Year is said to be consistent with suggestions that the world is slowly becoming warmer. Dr. H.E. Landsberg, Director, Weather Bureau Office of Climatology, declares that temperature readings and physical evidence tends to confirm this theory. He describes as "spectacular" the warming trend of the last two or three years along the Pacific Coast, from California to British Columbia.

( ) FREE RADICAL SYMPOSIUM: The Fourth International Symposium on Free Radical Stabilization will be held at the National Bureau of Standards, Washington, August 31 to September 2,1959. The theme of the meeting will be "Trapped Radicals at Low Temperatures" and papers will emphasize the properties of solids containing trapped radicals, and chemical and physical interactions.

(Details available. Write National Bureau of Standards, Office of Technical Information, Washington 25, D.C.)

( ) ARMY WEATHER STATIONS: Studies at Stanford Research Institute, Menlo Park, Calif. are directed toward analysis and design of automatic weather reporting stations for the U.S. Army. The devices must perform various types of sensing, measuring, recording and telemetering of meteorological data. One unit must be light enough for human portability and capable of operating unattended for one week. The Army has specified that the other units must have much greater data capacity, must be truck-transportable and must be able to function without attendance for longer periods.

( ) EARTHQUAKE TELEMETERS: U.S. Coast and Geodetic Survey plans to use radio telemetering systems for the detection of earthquakes at stations at Honolulu and Fairbanks, Alaska. The decision follows successful testing of such a system at Mount Lemmon, near Tucson, Arizona. The pick-up unit is housed in a small, insulated building topped by a directive antenna. It includes a seismometer, amplifiers, converters, and a frequency-modulated transmitter. The unit is powered by a butane motor. A similar system is being tested for tidal data from buoys at sea.

PUBLICATION CHECKLIST

( ) Patent Practices of the National Science Foundation and the Tennessee Valley Authority are surveyed in two new preliminary Congressional reports. Of interest to research organizations and chemical and metallurgical organizations. (Reports are free in limited quantities. Write Subcommittee on Patents, Committee on Judiciary, HOLC Building, Washington, D.C.)

( ) AEC Rules and Regulations, a compilation in loose-leaf form covering the Atomic Energy Commission rules and regulations through May 31, 1958. 112 pages. $3 in U.S. and $4 for foreign mailings. (Write Superintendent of Documents, Government Printing Office, Washington 25, D.C. for Publication Y 3.At 7 :6-2/958.)

( ) Automation, and employment opportunities for officeworkers. A report on effect of computers on employment with a special section on programmers. 14 pages. 15 cents. (Write Superintendent of Documents, Government Printing Office, Washington 25, D.C. for Occupational Outlook Report L 2.3:1241.)

( ) Oceanography, a condensation of a report calling for expanded research efforts in the marine sciences. Free in limited quantities. (Write Information Office, National Academy of Sciences, 2101 Constitution Avenue, Washington 25, D.C.)

( ) Cermets, a review of development of different varieties of these materials, including their physical and mechanical properties. Paper presented at 1958 meeting of Advisory Group for Aeronautical Research and Development (AGARD) 20 pages. Free. (Write NASA Research Information, 1520 H Street, N.W., Washington 25, D.C. for N-60362x - Cermets.)

( ) Elastomers, a paper presented at the 1958 AGARD meeting discussing the relatively new subject of Elastomer Technology. Recent data on properties of special high-temperature polymers and their compounds is included. 23 pages. Free. (Write NASA Research Information, 1520 H Street, N.W., Washington 25, D.C. For N66133 - Elastomers.)

( ) Systems, a report prepared at the University of Chicago for the Air Force on the fundamentals of the theory of systems. Includes theories followed in current engineering practice and discusses digital computing systems. 137 pages. $2.75. (Write OTS, U.S. Department of Commerce, Washington 25, D.C. for PB 151 242.)

( ) Research Highlights, the annual report of the National Bureau of Standards, emphasizing space-age research efforts to increase the range and precision of physical measurements. 138 pages. 45 cents. (Write Superintendent of Documents, Government Printing Office, Washington 25, D.C. for NBS Miscellaneous Publication 226.)

( ) Technology of Molybdenum, and its alloys. Abstracts of papers presented at a Symposium sponsored by the Office of Naval Research. Includes information on molybdenum as a structural material, its preparation and metallurgy, developments in European technology, and the use of molybdenum alloys in gas turbines. 16 pages. 75 cents. (Write OTS, U.S. Department of Commerce, Washington 25, D.C., for PB 131 793.)

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